

27. (TWICE AMENDED) An optical disc which stores data, comprising:  
a substrate covered by a protective layer, and having a first surface, which corresponds  
to a track having a width; and  
first protrusions extending from the first surface, wherein the first protrusions are track  
guides for the data and narrow in a direction toward the protective layer.

**REMARKS**

**INTRODUCTION:**

In accordance with the foregoing, claims 1, 7, 12, and 27 have been amended. Claims 1-30 are pending and under consideration.

Since "toward a protective layer" or "protrusion narrows in a direction toward the protective layer" recited in claims 1, 7, 12, and 27, respectively, are described in FIG. 3, no new matter has been introduced by this Amendment.

**REJECTIONS UNDER 35 U.S.C. §112:**

Claims 1, 12 and 27 are rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification. The rejection is respectfully traversed.

Claims 1, 12, and 27 have been amended to delete "an outside of a substrate." Thus, withdrawal of the rejection under 35 U.S.C. §112 is respectfully requested.

**REJECTIONS UNDER 35 U.S.C. §103(a):**

Claims 1-30 are rejected under 35 U.S.C. §103(a) as being unpatentable over Lee *et al.*, U.S. Patent 5,470,627 (Lee *et al.* '574) in view of Vadamuttu, U.S. Patent 6,1165,391 (Vadamuttu '391). The rejection is respectfully traversed.

The Examiner asserted that Lee et al., '574 shows the Applicants' substrate, micro-embossments, which are track guides, and respective layers, and that Vadamuttu '391 shows the Applicants' micro-embossments. Also, the Examiner refers to grooves 33 of FIG. 4 of Lee et al. '574 as the Applicants' micro-embossments and first protrusions, and a micro-relief pattern of column 3, lines 66-67 of Vadamuttu '391 as to Applicants' micro-embossments.

First, the Applicants' micro-embossments and first protrusions protrude from flat portions toward a protective layer as recited in claim 1, 12, and 27, respectively.

To the contrary, the grooves 33 of FIG. 4 of Lee et al. '574 are described in col. 9, lines 14 and 15 as a microstructure in the form of the grooves 33 which is defined to have, nominally, a width of about 0.4um, and a depth of 0.1um. Therefore, the grooves 33 of Lee et al. '627 are clearly defined not to protrude from the substrate but to be cut into the substrate. {

In addition, the Applicants' FIGS. 1 and 2 labeled as PRIOR ART describe grooves 50 similar to the grooves 33 of Lee et al. '627 which do not protrude from the substrate but are cut into the substrate. Compared to the grooves 33 of FIG. 4 of Lee et al. '574 and the grooves 50 of the Applicants' FIGS. 1 and 2, the Applicants' FIG. 3 discloses the micro-embossments protruding from the flat portions toward the protective layer as recited in claims 1, 12, and 27. Since Lee et al. '627 fails to show the Applicants' substrate having the micro-embossments or the first protrusions, claims 1, 12, and 27 are patentably distinguishable from Lee et al. '627

Second, the Applicants' reflective, dielectric, recording, and protective layers are formed on the substrate having the flat portions and the micro-embossments or the first protrusions.

To the contrary, FIG. 4 of Lee et al. '627 discloses reflective, dielectric, recording, and protective layers formed on side surface 111 and the grooves 33. Since Lee et al. '627 fails to disclose the Applicants' reflective, dielectric, recording, and protective layers, claims 1, 12, and 27 are patentably distinguishable from Lee et al. '627.

Third, although Lee et al. '627 describes a double-sided optical storage, the grooves 33 of Lee et al. '627 do not protrude toward respective protective layers 150 but cut into an inside of a substrate 110 from respective side surfaces 111 as shown in FIG. 4. However, the Applicants' first and micro-embossments or first and second protrusions protrude toward respective protective layers. Since Lee et al. '627 fails to show the Applicants' optical disc having the first

and micro-embossments or the first and second protrusions, claims 7-11, 24-26, and 30 are patentably distinguishable from Lee et al. '627.

Fourth, although Vadamuttu '391 discloses the micro-relief pattern in column 3, lines 66-67, Vadamuttu '391 does not describe a shape and a location of the micro-relief pattern on a substrate. According to Vadamuttu '391 in column 4, lines 65-66, the micro-relief pattern is formed to provide a holographic image. In addition, Vadamuttu '391 describes a pattern of pits formed on a metallic film 12 defining a data recording in column 3, lines 26-31, and describes a second lacquer layer which is embossed in column 4, lines 65-66, and column 5, lines 57-58.

However, neither the pitted metallic surface nor the second lacquer layer of Vadamuttu '391 corresponds to the Applicants' micro-embossments and first protrusions, and Vadamuttu '391 also fails to show a relationship between data portions and the micro-relief patterns on the substrate. Accordingly, Vadamuttu '391 fails to show the shape and the location of the micro-relief pattern.

Please note again that the Applicants' micro-embossments and first protrusions are formed on the substrate and protrude from the flat portions toward the protective layer. Since Vadamuttu '391 fails to show the Applicants' micro-embossments and the first protrusions, claims 1, 12, and 27 are patentably distinguishable from Vadamuttu '391.

Fifth, the Applicants' micro-embossments protrude from flat portions and narrow in a direction toward the protective layer. However, neither Lee et al. '627 nor Vadamuttu '391 teaches the Applicants' micro-embossments. Thus, claims 1, 12, and 27 are not obvious over Lee et al. '627 and Vadamuttu '391.

Sixth, Lee et al. '627 and Vadamuttu '391 does not teach or suggest the Applicants' micro-embossments and first protrusions nor the Applicants' layers formed on the substrate having the flat portions and the micro-embossments or first protrusions.

It is submitted that Lee et al. '627 and Vadamuttu '391 neither teaches that the micro-relief pattern can be used as track guides, nor suggests that any type of type of micro-embossments or protrusions can be used as the track guides. Accordingly, any combination of a disk 31 of Lee et al. '627 and the micro-relief pattern of Vadamuttu '391 results in the micro-relief pattern merely formed on the disk. Thus, it is also submitted that the combination of Lee et al.

'627 and Vadamuttu '391 does not show the Applicants' micro-embossments or protrusions formed as track guides and Applicants' layers.

It is well established that all claim limitations must taught or suggest in prior art reference according MPEP 2143.03. Neither the Applicants' micro-embossments and the first protrusions nor the Applicants' layers formed on the substrate having the flat portions and the micro-embossments or first protrusions protruding from the substrate are suggested by any combination of Lee et al. '627 and Vadamuttu '391.

Since claims 1, 12, and 27 are not obvious over Lee et al. '627 in view of Vadamuttu '391, claims 1, 12, and 27 are deemed to be allowable. Claims 2-11, 13-26, and 27-30 are also deemed to be allowable at least due to their dependency or the allowable claims 1, 12 and 27, respectively. Therefore, withdrawal of the rejection of claims 1-30 is respectfully requested.

**CONCLUSION:**

In view of the foregoing amendments and remarks, it is respectfully submitted that each of the claims patentably distinguishes over the prior art and therefore defines allowable subject matter. A prompt and favorable reconsideration of the rejection, along with the indication of allowability of all pending claims are therefore respectfully requested.

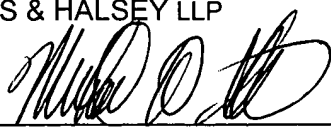
If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

Date: 4/21/03

By:   
Michael D. Stein  
Registration No. 37,240

700 Eleventh Street, NW, Suite 500  
Washington, D.C. 20001  
(202) 434-1500  
Washington, D.C. 20001  
Telephone: (202) 434-1500

**MARKEDUP VERSION OF AMENDMENT**

1. (THRICE AMENDED) An optical disc comprising:

a substrate having flat portions, which correspond to tracks having a width, and micro-embossments, which are track guides, protruding from surfaces of the flat portions [toward an outside of the substrate and narrowing in a direction toward the outside of the substrate to enhance a recording density];

a reflective layer formed on the surfaces of the flat portions and the micro-embossments of the substrate;

a dielectric layer formed on the reflective layer;

a recording layer formed on the dielectric layer and having portions corresponding to the flat portions [and the width to provide the recoding density]; and

a protective layer formed on the recording layer,

wherein the micro-embossments protrude toward the protective layer and narrow in a direction toward the protective layer.

*to the protective layer*

7. (ONCE AMENDED) The optical disc of claim 1, wherein said substrate has a first side having the flat portions and the micro-embossments, said substrate further comprising a second side opposite and substantially parallel to the first side and having second flat portions and second micro-embossments, which are track guides, protruding from surfaces of the second flat portions, the optical disc further comprising:

a second reflective layer formed on the surfaces of the second flat portions and the second micro-embossments of the second side of the substrate;

a second dielectric layer formed on the second reflective layer;  
a second recording layer formed on the second dielectric layer; and  
a second protective layer formed on the second recording layer,  
wherein the second micro-embossments protrude toward the second protective layer.

12. (TWICE AMENDED) An optical disc comprising:

a substrate having a first surface, which corresponds to a track having a width, with first protrusions extending from the first surface [toward an outside of the substrate], and covered by a protective layer, wherein the first protrusions are track guides for data recorded on the track and [narrows] narrow toward the [outside of the substrate] protective layer.

27. (TWICE AMENDED) An optical disc which stores data, comprising:

a substrate covered by a protective layer, and having a first surface, which corresponds to a track having a width; and

first protrusions extending from the first surface [toward an outside of the substrate], wherein the first protrusions are track guides for the data and [narrows] narrow [the width of the track guides toward the substrate] in a direction toward the protective layer.